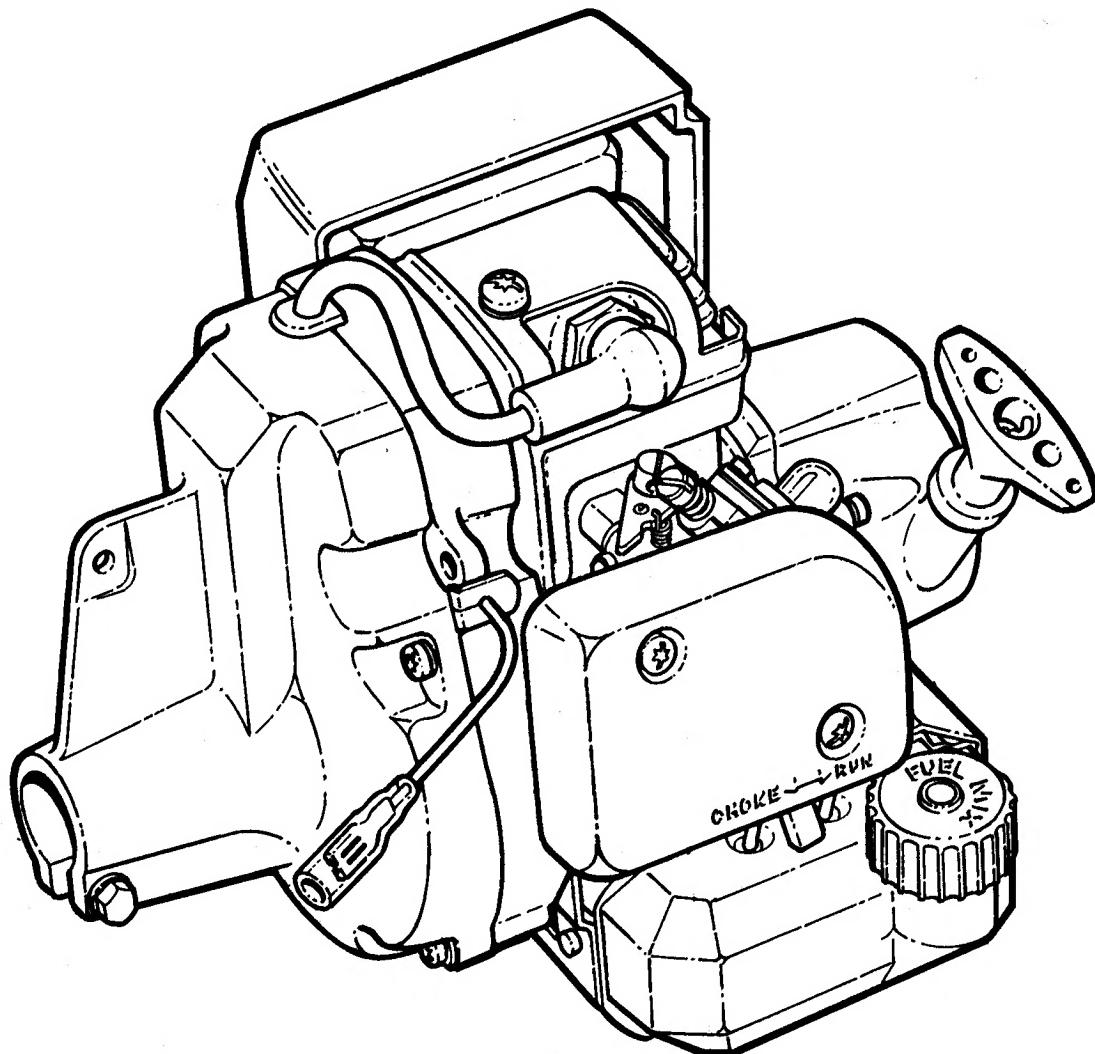


Service Manual for

# **SNAPPER**



## **TRIMMER ENGINES:**

**Models 212CST, 213CST, 214DCST & 215SST**

**SNAPPER POWER EQUIPMENT**  
McDonough, GA • 30253



**MANUAL #07415 (IR 4/88)**

# TABLE OF CONTENTS

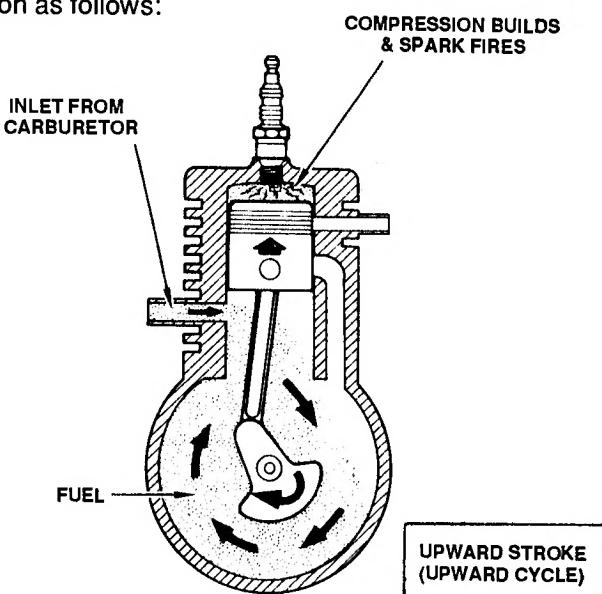
TWO CYCLE ENGINE THEORY.....	3
FAMILIARIZATION.....	4
INTRODUCTION.....	5
POWERHEAD CHANGES.....	5
MANUAL LAYOUT.....	5
FAN HOUSING CLUTCH.....	5-6
FLYWHEEL, IGNITION SYSTEM.....	6-7
STARTER.....	7-9
AIR FILTER.....	9-10
CARBURETOR & FUEL SYSTEM.....	10
CARBURETORS.....	10
ZAMA NON-GOVERNED CARBURETOR.....	10-11
WALBRO GOVERNED CARBURETOR.....	12
GENERAL CARBURETOR INFORMATION.....	12
FUEL TANK SYSTEM.....	13
EXHAUST SYSTEM.....	13-14
THE POWER HEAD.....	14
PRESSURE TEST.....	14
PISTON REMOVAL.....	14-15
CRANKCASE.....	15
MAIN BEARINGS & OIL SEALS.....	15-16
CARBURETOR TROUBLESHOOTING GUIDE.....	17
21.2 cc TWO-CYCLE ENGINE TROUBLESHOOTING PROCEDURES.....	18

IT IS THE POLICY OF SNAPPER POWER EQUIPMENT TO IMPROVE ITS PRODUCTS WHENEVER IT IS POSSIBLE AND PRACTICAL TO DO SO. WE RESERVE THE RIGHT TO MAKE CHANGES OR ADD IMPROVEMENTS AT ANY TIME WITHOUT INCURRING ANY OBLIGATION TO MAKE SUCH CHANGES ON PRODUCTS MANUFACTURED PREVIOUSLY.

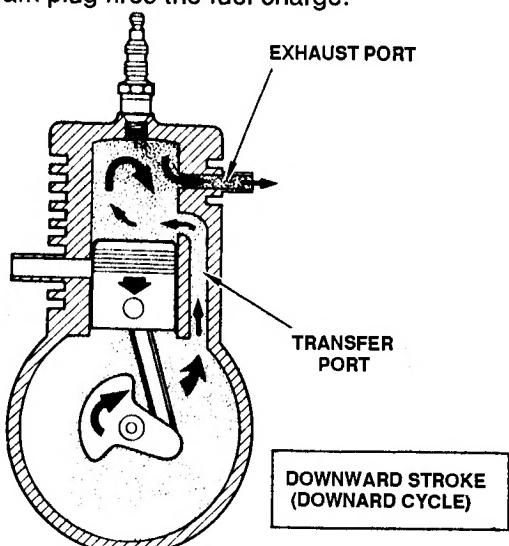
# TWO-CYCLE ENGINE THEORY

## TWO-CYCLE ENGINE OPERATIONS

The two-cycle engine has two strokes or cycles in which to complete all of the steps necessary to achieve combustion as follows:



**THE UPWARD STROKE OR CYCLE** of the Piston creates a vacuum in the crankcase which sucks the air-fuel mixture from the carburetor. At the same time, the piston seals off the transfer and exhaust ports and compresses the fuel charge in the combustion chamber. Near the top of the upward stroke, the spark plug fires the fuel charge.



**THE DOWNWARD STROKE OR CYCLE** of the Piston caused by the exploding fuel, seals the inlet from the carburetor and begins to build pressure in the crankcase. As the piston continues downward, the exhaust port is uncovered and burned gases escape from the combustion chamber. Near the bottom of the downstroke, the transfer port is uncovered by the piston and the compressed air-fuel mixture in the crankcase rushes into the combustion chamber. While some fuel escapes through the exhaust port, the whirling motion of the incoming fuel charge clears the combustion chamber of almost all burned gases while limiting the escape of fresh fuel.

## TWO-CYCLE LUBRICATION

Engine lubrication depends on the addition of oil to the gasoline. When this mixture passes through the carburetor, it becomes vaporized, allowing tiny droplets of oil to lubricate all internal surfaces.

## TWO-CYCLE GASOLINE

- Use either **regular grade leaded** or **regular grade unleaded** gasoline. Two Cycle fuel is a mixture of gasoline and lubricating oil. The ratio of gasoline to oil is important. Always use **SNAPPER 32:1** two-cycle custom lubricant following the mixing table instructions on the bottle or can. If **SNAPPER** lubricant is not available, you can use a quality brand two-cycle oil at a 20:1 ratio.
- **DO NOT USE LEADED OR UNLEADED GASOLINE ALTERNATELY** because changing fuel types can cause serious engine damage and void Manufacturer's warranty. Always use regular grade leaded gasoline or always use regular grade unleaded fuel. Use only one type.
- **GASOHOL USE IS PROHIBITED** as a fuel in any **SNAPPER** Two-Cycle engine product. It will damage the engine and void the Manufacturer's warranty. Because of its affinity for water, the alcohol in the Gasohol draws water from the atmosphere. Since the density of water is greater than the gasoline, it settles to the bottom of the tank along with the alcohol. There is no effective way to remove the water. Water contaminated Gasohol washes the cylinder walls of lubricant.

### 1. Alcohol Detection Test

In areas where Gasohol may pose a problem, a simple test for the presence of alcohol can be performed. To perform a test, a graduated glass cylinder is required and may be purchased from your local lab equipment supply center. To begin the test, pour equal amounts of gasoline and water into the measuring cylinder and stir or shake well. Let the mixture stand for several minutes.

### 2. Reading the Cylinder

The presence of alcohol in gasoline can be determined as follows:

- A. If there is no alcohol in the fuel, the amount of water and gasoline will be the same quantity as originally poured.
  - B. If there is alcohol present in the gasoline, the quantity of water will be greater than the amount originally poured into the cylinder.
- **MIX FUEL** by pouring half of the gasoline and all of the oil into an approved fuel container. Cover the container and shake vigorously. Add the rest of the gasoline and shake again to thoroughly mix fuel and oil.

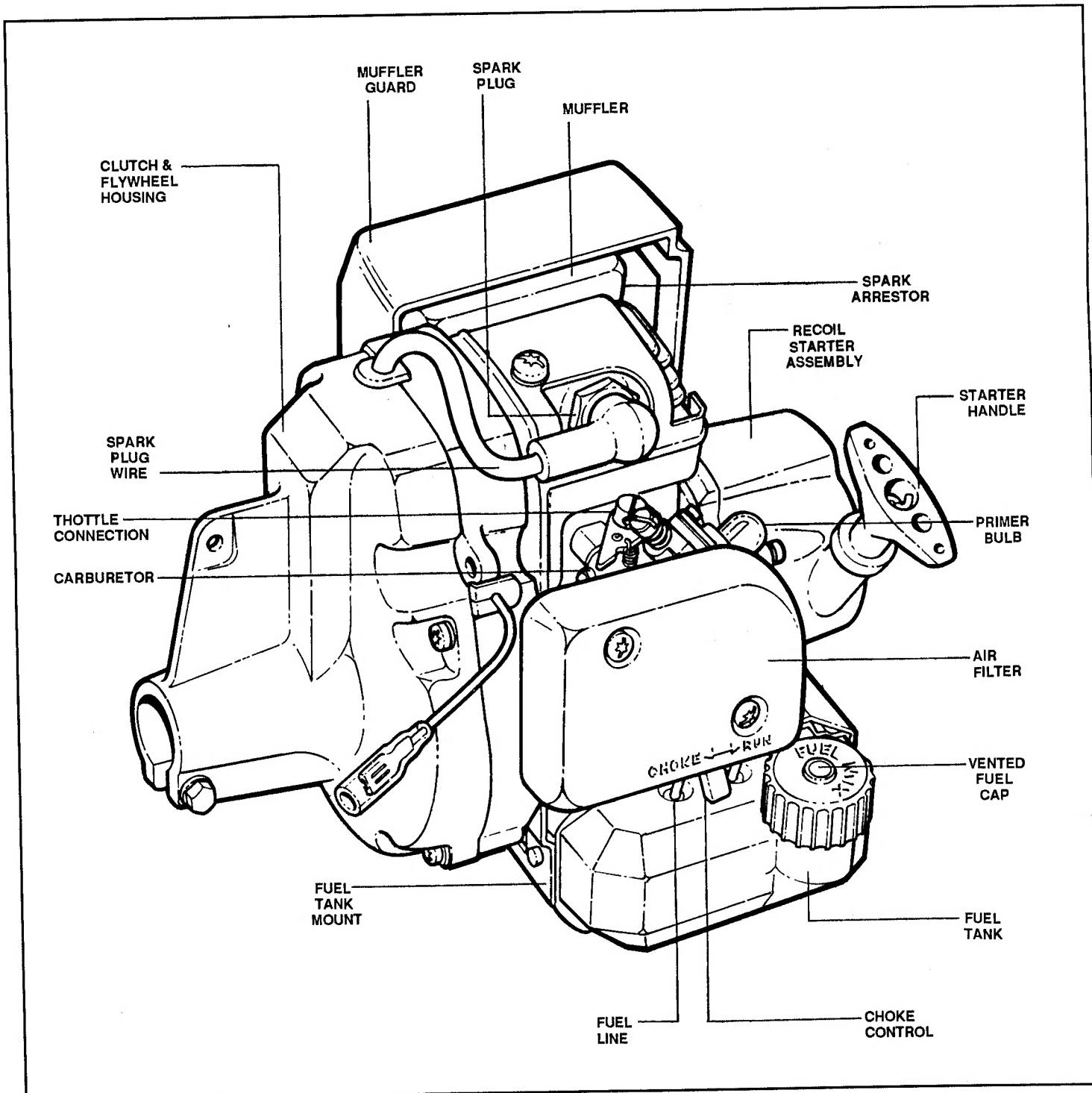
**NOTE:** When two-cycle engines are used only occasionally, there may be trouble starting the engine because most gasolines are adjusted to compensate for seasonal temperatures, and a gasolines purchased during the summer may not provide easy starting in the winter. Gasoline should be bought as needed and not stored over a long period.

# FAMILIARIZATION

This manual was prepared to expedite service repairs on the **SNAPPER 21.2 cc Power Head Engine**. At the time of writing, the data contained herein was completely up-to-date. However, due to **SNAPPER'S** continued improvement in design requirements, it is possible that the appearance of component parts may vary slightly from those of the actual engine being repaired.

## NOMENCLATURE

The nomenclature drawing below shows the essential parts of the **SNAPPER 21.2 cc Power Head** Engine. It is recommended that all mechanics and other repair personnel become thoroughly familiar with the controls, components and operation of this engine before attempting any repairs.



# SERVICE MANUAL 21.2cc ENGINE

## INTRODUCTION

The purpose of this manual is to provide service information and procedures that will enable you to properly service the **SNAPPER 21.2cc** engine - a versatile, dependable 2-cycle power unit.

## POWERHEAD CHANGES

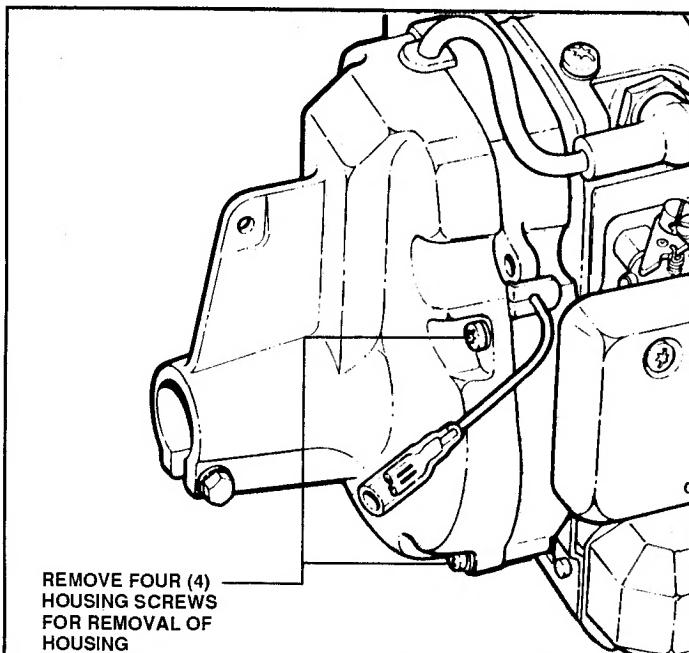
There have been various minor changes to the 21.2cc engine since its introduction several years ago. Therefore, when servicing a particular unit, always identify the model number and serial number prefix in order to reference the correct Illustrated Parts List.

## MANUAL LAYOUT

This manual will cover the various configurations of the **POWERHEAD** since its introduction. Beginning with the removal of the Fan Housing, the manual will proceed through tear-down techniques, until the unit is completely disassembled. Special assembly procedures will be noted during the disassembly procedures. Where there are two versions of the same component, the parts will be covered separately, one preceding the other.

### A. FAN HOUSING CLUTCH

1. To gain access to the clutch and drum, remove the four fan housing retaining screws.



2. The clutch drum and drive coupler in the fan housing are supported by a roller bearing.

3. To remove the drum, insert a deep socket into the fan housing as shown. Support the ends of the fan housing so that the drum and bearing may be pressed out. (Do not tap out the drum). You must use an arbor press or like device for this operation. See Figure 3.

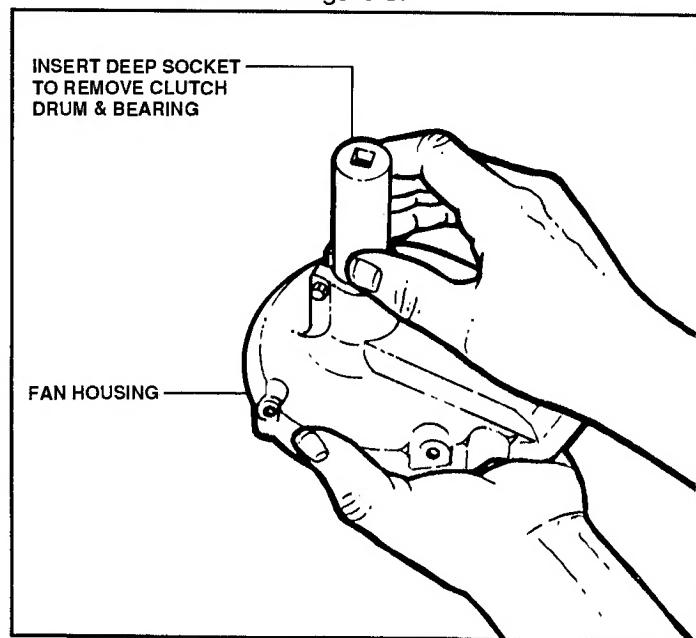


FIGURE 3

4. Remove the bearing from the drive adapter shaft by first lifting off the washer and removing the snap ring.
5. Using a bearing puller or by supporting the bearing between two surfaces as shown, press the shaft through the bearing. Reinstall bearing by pressing on inside of clutch drum, using the same techniques as removing the bearing. See Figure 4.

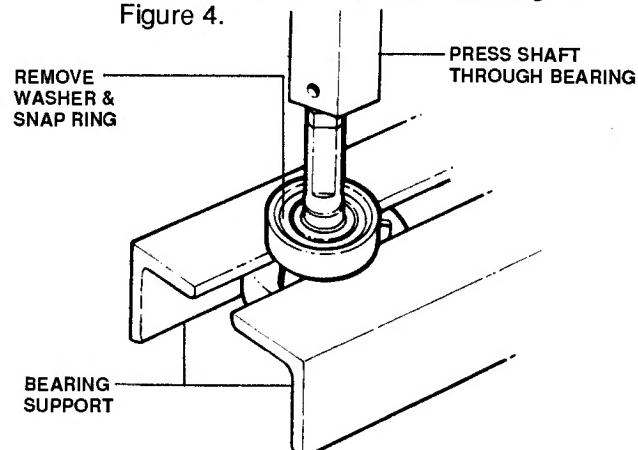


FIGURE 4

- Reinstall clutch drum assembly by first reinserting washer into fan housing, rounded portion of washer facing in. Lightly coat the housing where the bearing will be inserted with clean 30 - weight oil. Pressing on the center of the drum, press the assembly in until it seats. Be certain that assembly is not uneven when applying press force. See Figure 5.

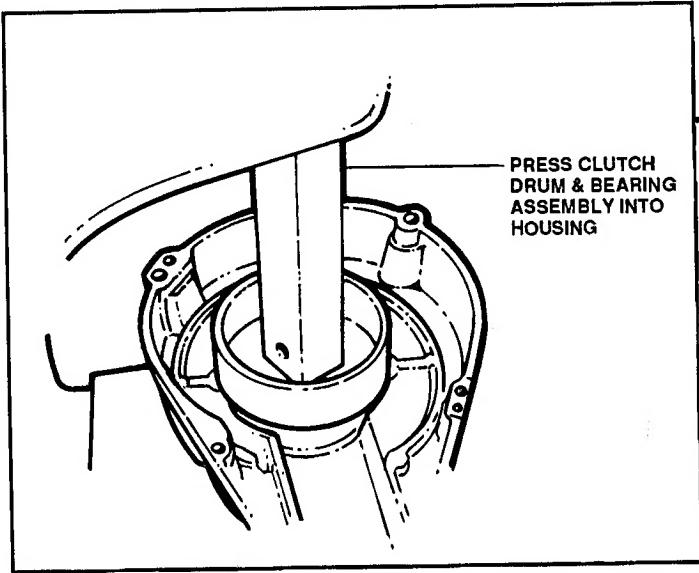


FIGURE 5

- Clutch removal is made easy with special tool, part number 42186. First, remove the spark plug and insert a knotted piece of rope into the cylinder to act as a piston stop. Remove clutch in a counter-clockwise direction. Any portion of the clutch may be serviced separately by removing the two clutch springs. See Figure 6.

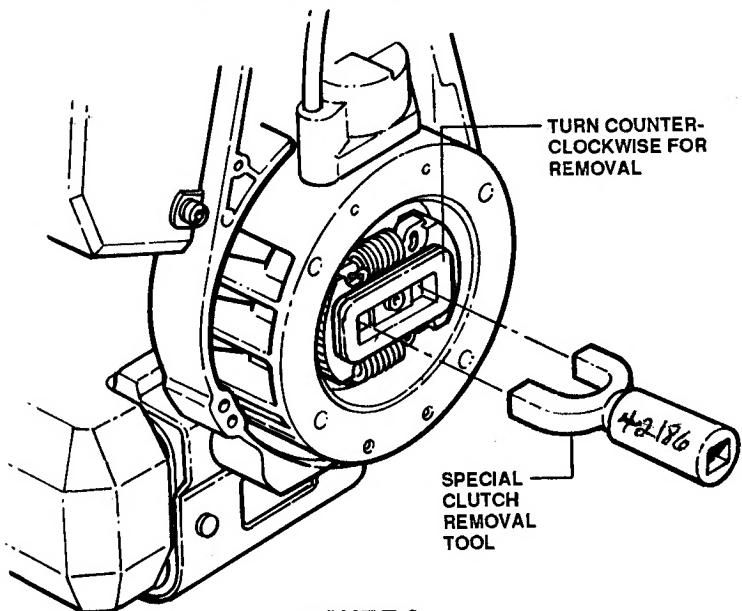


FIGURE 6

## B. FLYWHEEL, IGNITION SYSTEM

- Remove the flywheel by holding the engine slightly off the table and tapping the non-magnetic side of the flywheel with a plastic hammer. Once loosened, pull the flywheel off the crankshaft. See Figure 7.

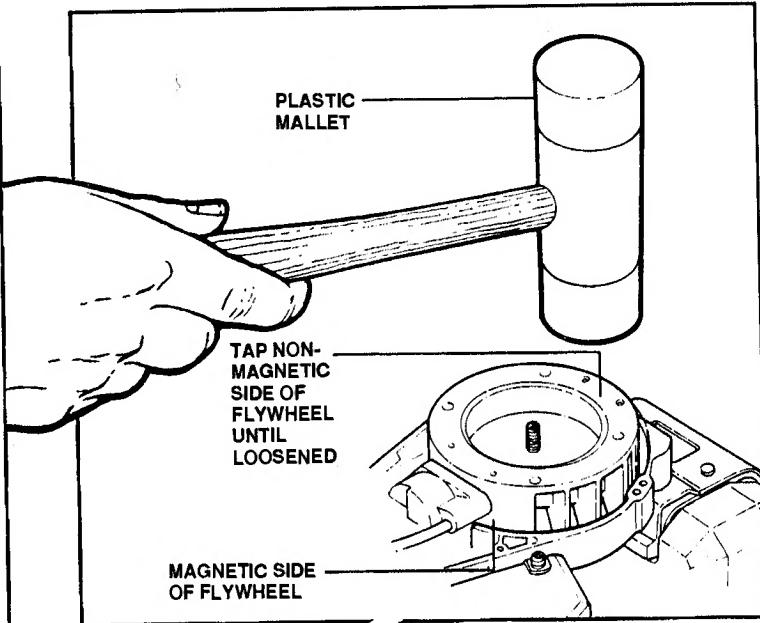


FIGURE 7

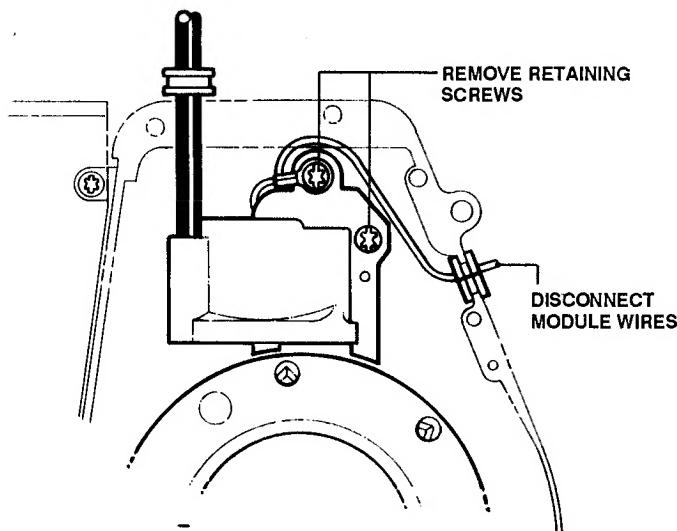
- As a general rule, the magnet on the flywheel should be strong enough to hold the flywheel to a screwdriver. Letters on the flywheel "S" (SEM) stand for the brand of the ignition that the flywheel should be keyed to.

---

**NOTE** SEMS  
For McAllanell, Full Line  
Exception, SEM AM 32 ignition should be keyed to the keyway for Wabash ignitions.  
*Not used*

---

- A sheared woodruff key will adversely affect the timing of the engine. Ensure that the key is in excellent condition before reinstalling the flywheel. Torque flywheel nut on clutch to 150-165 lbs. in. lbs.
- The theory that an "ignition either works or does not work" is not always true. Electronic Ignitions can produce intermittent spark or spark only at certain temperatures. Refer to the troubleshooting guide when in doubt about ignition problems. Replace the ignition by removing the two retaining screws and disconnecting the module wires. See Figure 8.

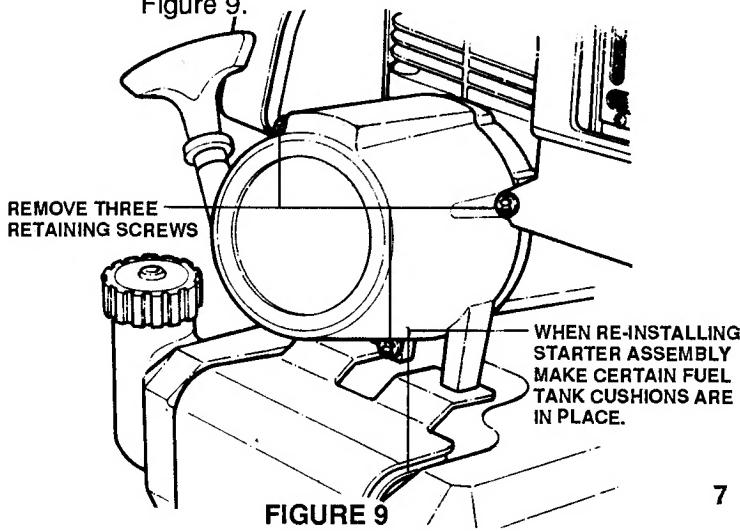


**FIGURE 8**

- Reinstall the ignition assembly leaving the retaining screws finger tight. Place a .012 feeler gauge between the ignition and flywheel as shown. Rotate the flywheel until magnets are adjacent to the ignition, draw the ignition tight against the flywheel. Torque the ignition retaining screws to 12 - 16 in. lbs. Reconnect module wires.

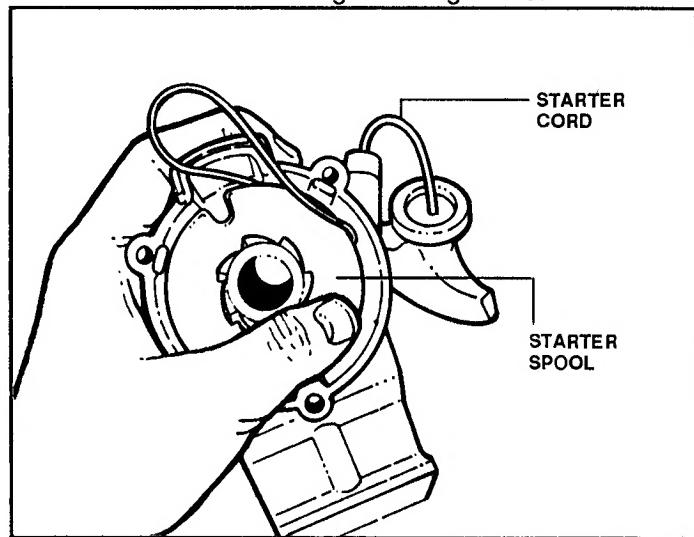
### C. STARTER

- Like the fan housing, the starter housing is offered in metal or plastic. Shown here in plastic, the main difference between the two housings is the method by which the fuel tank is retained.
- To service the plastic starter, remove the three retaining screws, one of which is the muffler shield screw. The starter housing in conjunction with a cast section on the crankcase form the fuel tank brackets. Both areas must be covered with appropriate tank cushions as shown. See Figure 9.



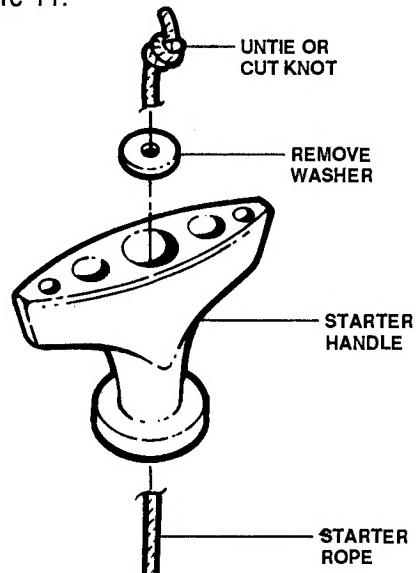
**FIGURE 9**

- The metal starter is fastened in the same manner as the plastic fan housing.
- While the starter mechanics on the metal starter are the same as the plastic starter, the fuel tank bracket assemblies are very different. The metal starter and brackets are shown here in order of disassembly. Refer to Figure 9.
- Because the two starters operate the same, only one type (the plastic starter) will be depicted to demonstrate drum, rope and spring replacement. To replace starter components, first pull a section of cord out from the spool and release coil tension. The rope should then dangle without recoiling. See Figure 10.



**FIGURE 10**

- Remove the handle by untying or cutting the knot and removing the washer. See Figure 11.



**FIGURE 11**

**WARNING**  
USE FACE MASK OR PROTECTIVE SHIELD  
BEFORE ATTEMPTING NEXT STEPS!

- To remove starter drum, remove the single retaining screw and washer. The spring beneath the starter drum is still under tension. Gently remove the starter drum with a slight twisting motion. See Figure 12.

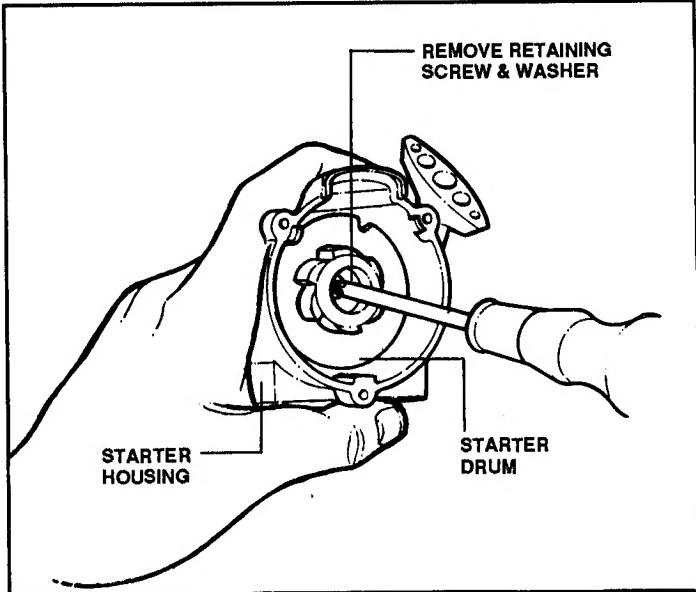


FIGURE 12

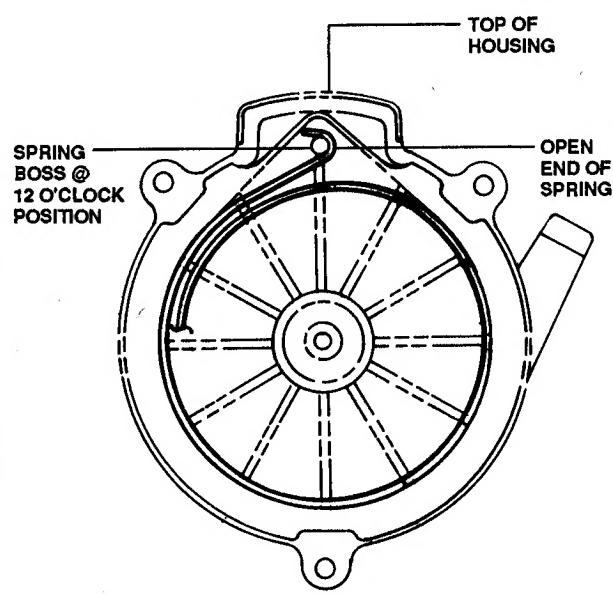


FIGURE 13

- Reinstall new rope with knot securely tucked away in the pocket as shown. Apply a light coat of grease to the spring side of the drum. See Figure 14.

**NOTE**  
IF ONLY REPLACING DRUM/ROPE ASSEMBLY,  
BE CERTAIN THAT STARTER SPRING REMAINS  
SEATED, FLUSH AGAINST STARTER HOUSING.  
IF THE SPRING IS NOT FLUSH, IT MAY HAVE  
TO BE REMOVED AND REWOUND BY HAND.  
TO REMOVE SPRING, GENTLY TAP STARTER  
ON TABLE, FACE DOWN, TRAPPING THE UN-  
WINDING SPRING AGAINST THE TABLE.

- While an existing spring must be wound by hand or machine, a new spring comes pre-wound. Firmly grasp the spring and remove the retention band.
- Gently install spring into housing. Ensure that spring is flush on housing floor. The open end of the spring should go around the boss, located at the 12 o'clock position, and face away from the rope. See Figure 13.

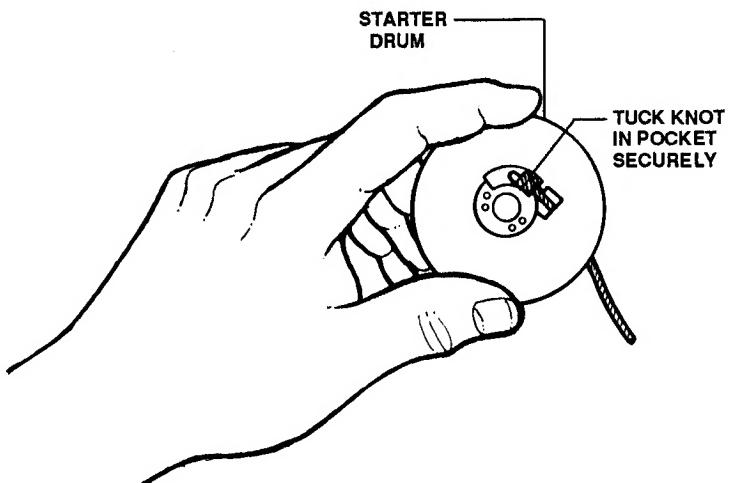


FIGURE 14

11. Feed the starter rope through the rope guide and seat the drum securely against the starter. Torque drum screw to 18 - 21 in. lbs. Insert rope through handle, install washer, and knot end of rope securely. See Figure 15.

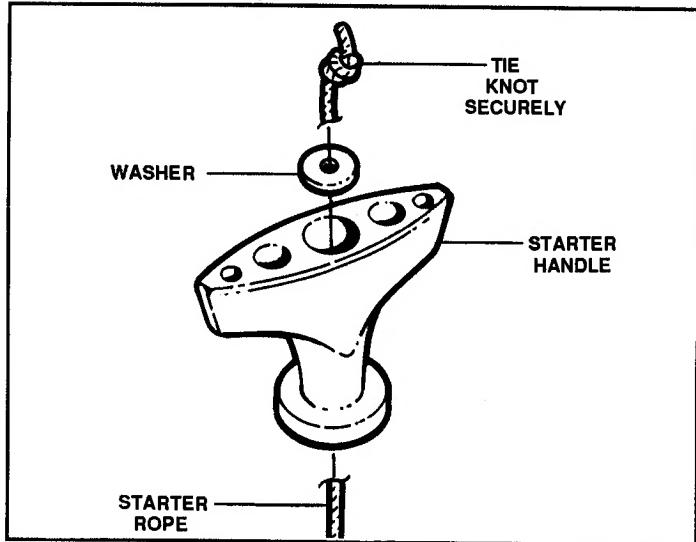


FIGURE 15

12. With the rope hooked in the starter drum notch, make several counter-clockwise rotations in order to place tension on the starter spring. There should be ample recoil strength to retract the handle back to the rope guide. Refer to Figure 16.

13. Finally, test recoil strength by pulling out all starter rope and holding between fingers as shown. There must be approximately 1/4 turn of play left in the starter drum after full extension of the rope. If there is not sufficient play, take one rotation on the drum in the reverse direction. See Figure 16.

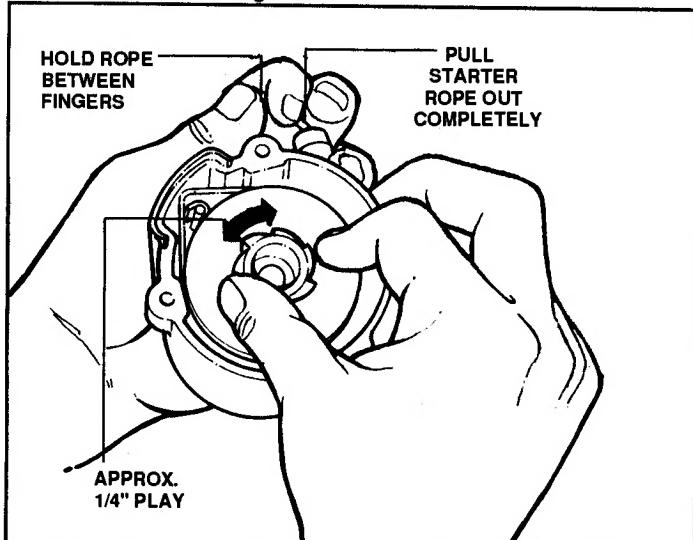


FIGURE 16

14. At this point, the starter housing could be reinstalled on the engine or the ratchet assembly serviced. Retorque the starter housing retaining screws to 12 - 16 in. lbs. Use loctite.

15. The starter drum engages with the starter ratchet to turn the engine for starting.
16. Using a 12mm wrench, hold the lower ratchet nut stationary and remove the upper ratchet nut. Next, remove the ratchet assembly by winding it off counter-clockwise. See Figure 17.

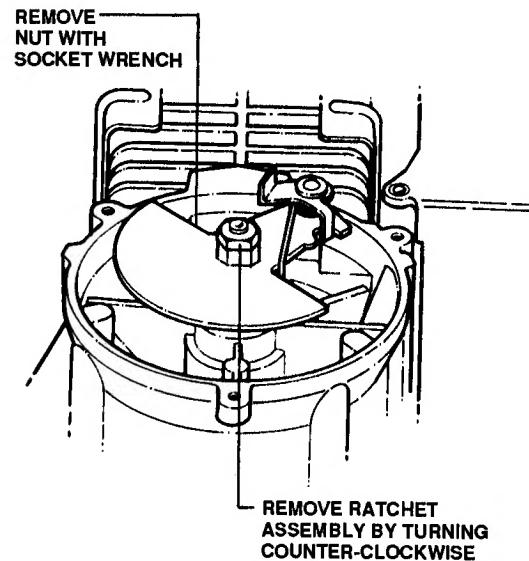
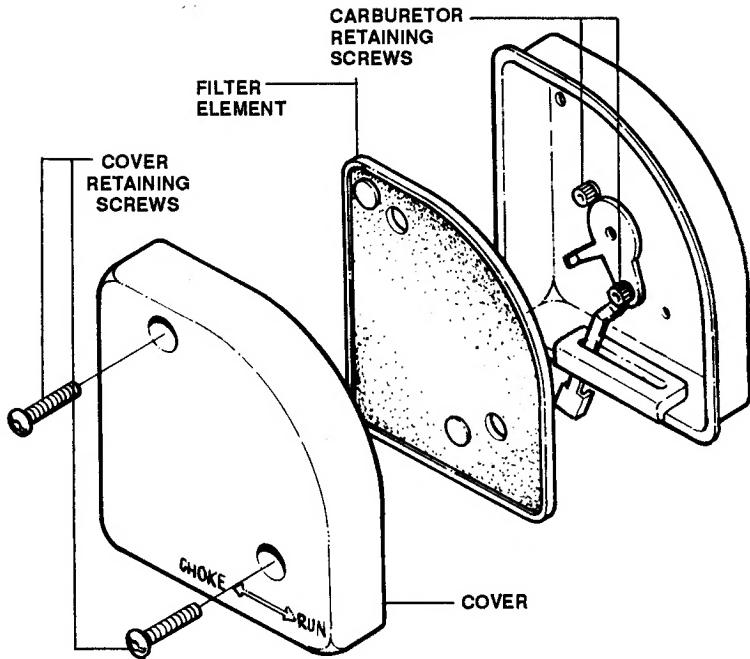


FIGURE 17

17. The entire ratchet assembly must be replaced if any part of it becomes worn or broken. Reinstall the ratchet hand tight and retorque the upper nut to 150-168 in. lbs.

#### D. AIR FILTER

- To remove the air filter assembly, remove the two air filter cover retaining screws. Lift the cover off and remove the air filter seated in the back of the cover. See Figure 18.



**FIGURE 18**

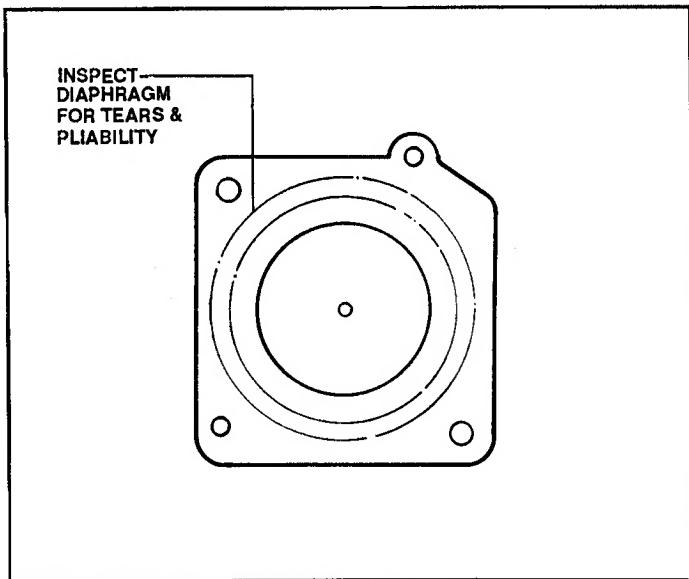
2. Remove the two inner air filter screws and remove the carburetor, manifold and gaskets. As always, make note of the order and position in which the components are removed. Replace all worn or torn gaskets. Refer to Figure 18.
  
3. Reinstall the air filter assembly, be certain to place the two (2) washers/spacers beneath the choke plate. Tighten the airbox retaining screw on the choke plate lightly and test movement of choke shutter before final torque. Torque to 25 - 30 in. lbs. Some metal airbox units were equipped with carburetor studs instead of screws. In those cases, nuts retained the airbox. Tighten nut to 20 - 25 in. lbs. Refer to Figure 18.
  
- E. CARBURETOR AND FUEL SYSTEM
  1. Because of the various applications of the 21.2cc power unit, several different carburetors are used on the engine. This manual will cover the two basic types: Zama - Trimmer carburetor  
Walbro - Trimmer governed carburetor.

## F. CARBURETORS

1. All carburetors on these engines may be checked for leakage with a simple pressure tester. Connect the hose of the tester to the fuel inlet nipple and pressurize the carburetor to 6 P.S.I. The carburetor should be able to hold 6 P.S.I. with no leaks. Leaks may occur at the inlet needle, welch plugs or fuel pump gaskets/cover. The inlet needle should release pressure at 16 - 29 P.S.I.

## G. ZAMA NON-GOVERNED CARBURETOR

1. Inspect primer bulb for visible leaks before disassembly.
  
2. To inspect the metering portion of the carburetor, remove the two (2) cover retaining screws. Inspect the diaphragm for tears and pliability. Ensure that the cover vent hole is open and the cover is in good condition. Also, examine the metering disc for breaks. See Figure 19.



**FIGURE 19**

3. Remove the inlet needle retaining screw to release the metering system. See Figure 20.

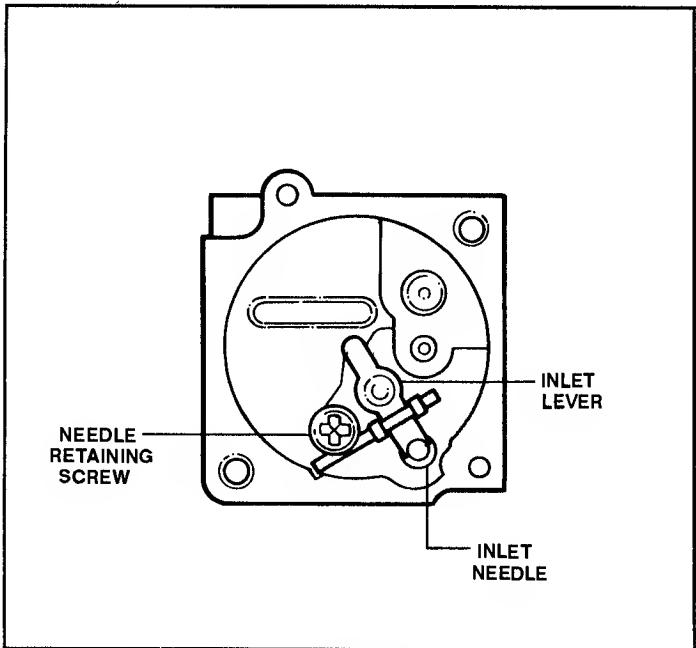


FIGURE 20

4. Inspect the rubber tip of the needle for swelling or dry rot. The lever spring must be in original form to operate the lever properly. Replace any components that are suspect. Reinstall the needle with care. Ensure that the spring is seated in the casting and is under the dimple on the bottom of the lever.
5. Set the metering lever so that the back of the lever is flush with the top of the carburetor body. If the lever is not flush, gently bend the lever until the desired setting is achieved. See Figure 21.

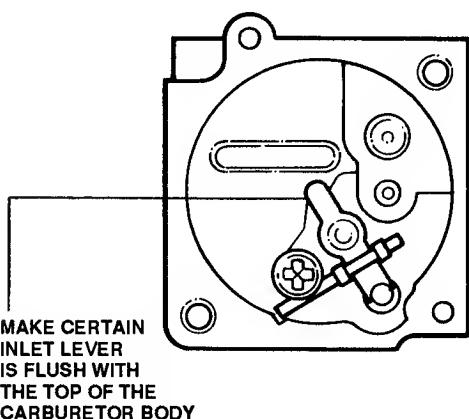


FIGURE 21

6. Replace welch plugs only if a leak is found. Gently punch the welch plug, being careful not to damage the casting below. Refer to Figure 20.

7. Reinstall the new plug with any device that is the same dimension as the welch plug. Seal the welch plug with "Seal All" or clear nail polish.
8. Remove the fuel pump cover for inspection of the fuel pump gaskets, diaphragms and screws. Ensure proper reassembly order of gaskets/diaphragms. See Figure 22.

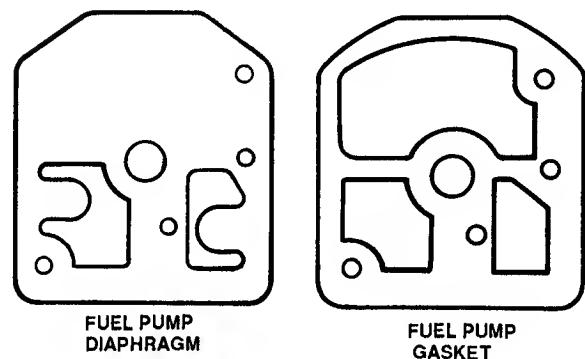


FIGURE 22

9. Remove high and low speed needles, inspect tips for damage. Reinstall the high speed needle one turn from seat, and the low speed needle 1-1/4 turns out from seat. **DO NOT** wind the needles tight when seating. Damage to tips will result. See Figure 23.

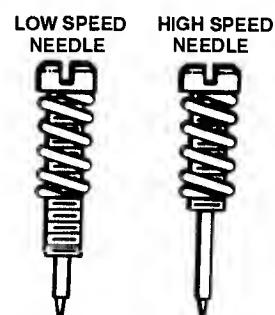


FIGURE 23

## H. WALBRO GOVERNED CARBURETOR

1. Installed on all Trimmers that accept Brush/Grass blades, the Walbro governed carburetor governs engine speed to approximately 6500 R.P.M. The "Hunting" characteristics or raising and lowering of engine R.P.M. is normal with this carburetor. No other type of carburetor should be substituted. Inspect the metering side for dry rot or torn gaskets/diaphragms. See Figure 24.

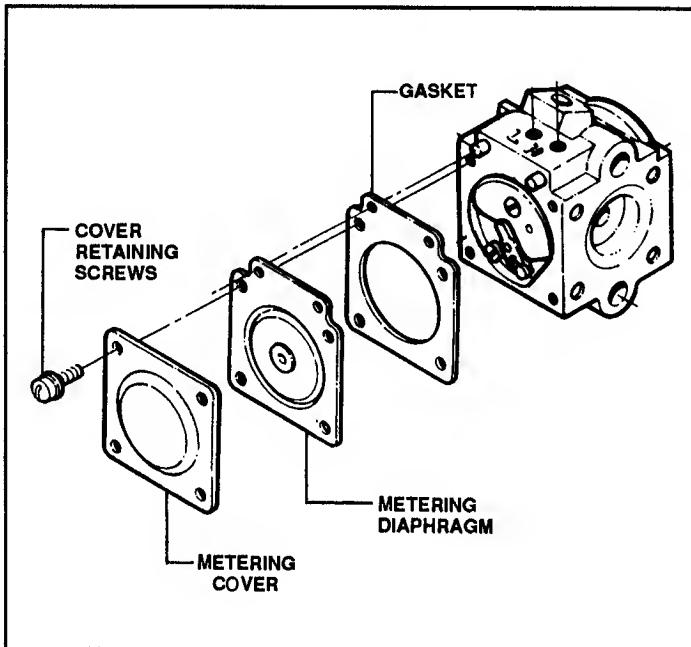


FIGURE 24

2. Inspect the inlet system as in the Zama carburetor, except reset the inlet lever flush with the carburetor floor. See Figure 25.

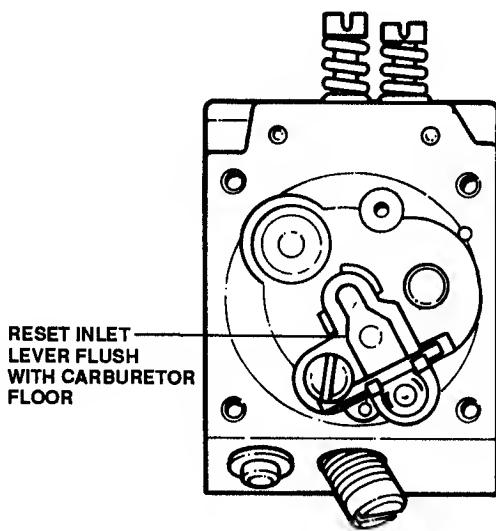


FIGURE 25

3. While the carburetor is off the unit, always inspect the condition of the fuel pump section. Replace any suspect components. The governor A is a spring and check ball system that releases fuel by engine vibration. (Approximately 6500 R.P.M.). The governor cannot be replaced, but can be removed and cleaned. Reseal governor screws with "Seal All" or clear nail polish. See Figure 26.

4. Examine the speed needles for tip damage and set to specs:  
HIGH SPEED NEEDLE - 1 turn from seat.  
LOW SPEED NEEDLE - 1 1/4 turns from seat.

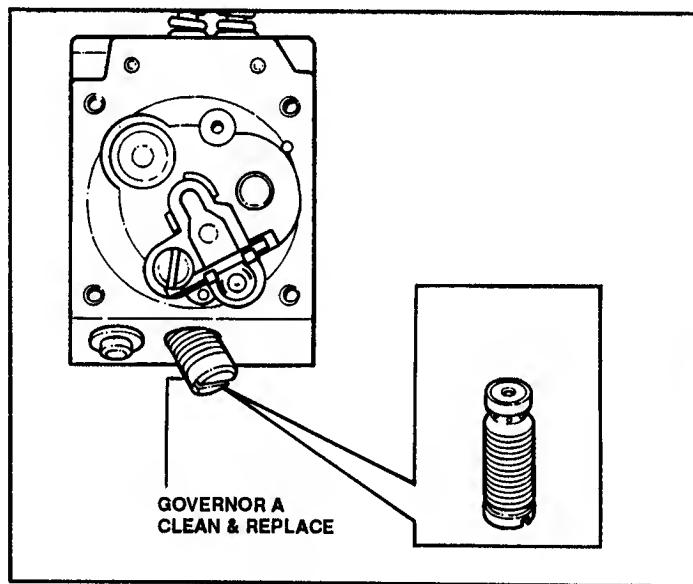


FIGURE 26

## I. GENERAL CARBURETOR INFORMATION

While carburetors may change slightly during the production of the 21.2cc engine, basic repair/troubleshooting techniques remain the same:

1. Pressure test to 6 P.S.I. for leaks of inlet, welch plugs and fuel pump.
2. Inspect all diaphragms/gaskets for dry rot and tears.
3. Clear all atmospheric vent holes in covers.
4. Clean all filters/screens.
5. Inspect inlet systems for bent springs, swollen needle tips, proper lever height.
6. Inspect and set high/low speed needles.
7. Ensure proper order of gaskets/diaphragms.

For additional information, refer to the carburetor troubleshooting chart in this manual, or your Illustrated Parts List.

## J. FUEL TANK SYSTEM

1. Remove the starter assembly as explained earlier. Gently pry off the fuel line. Refer to Figure 9, page
2. The fuel tank system consists of:
  - (A.) Tank
  - (B.) Vented fuel cap
  - (C.) Hose/Fuel Pickup
  - (D.) Hose/Fuel Return (On By-Pass Primer Carburetors)
  - (E.) Fuel pickup/filter. See Figure 27.

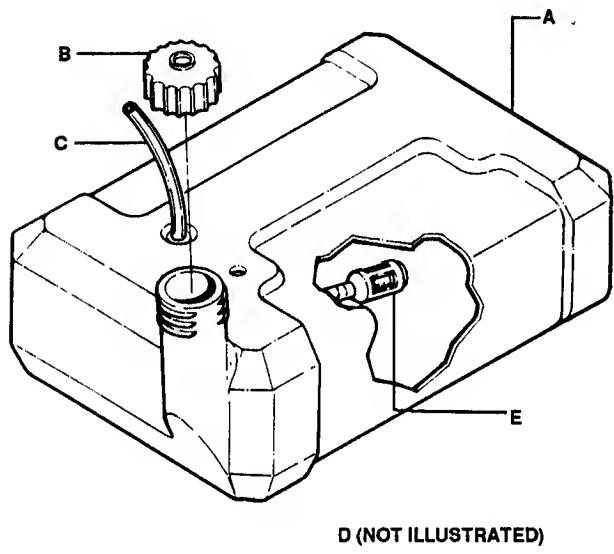


FIGURE 27

3. Retrieve the pickup with a bent paper clip. Replacement of filter/grommet and line can be done without removing the fuel tank from the unit. Never replace the filter without close examination of the fuel line. See Figure 28.

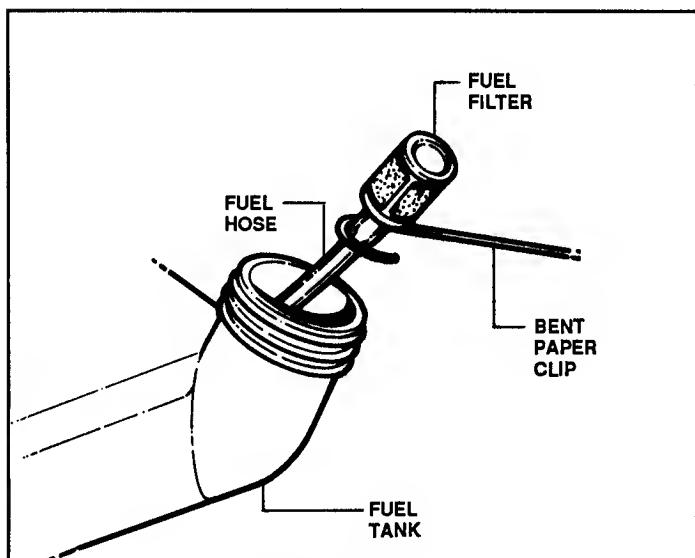


FIGURE 28

## K. EXHAUST SYSTEM

1. This engine is equipped with a plastic muffler shield.
2. Recalling that the one shield retaining screw was removed with the starter, remove the last two screws to remove the shield. See Figure 29.

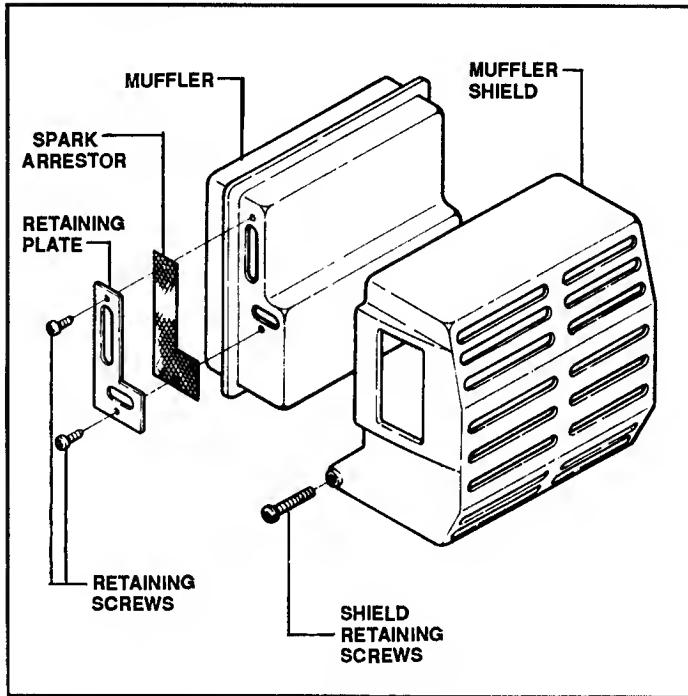


FIGURE 29

3. Be certain to include metal inserts when reinstalling shield. **NOTE:** Exhaust outlet on plastic shield allows for spark arrestor screen to be serviced without removal. Refer to Figure 33.
4. Ensure that exhaust gasket is not cracked and spark arrestor is clear. Replace spark arrestor screen rather than attempting to clean it. Cleaning the screen will normally result in enlarging screen holes, reducing screen's effectiveness to stop sparks.
5. While the muffler components are removed, examine the exhaust port for carbon buildup. Clean the port as follows:
  - (A.) Pull the starter rope slowly until the piston covers the port completely.
  - (B.) Use a wooden scraper and clean in and around the port. Do not use any metal or sharp-edged tool that might slip and scratch the piston or rings.

- (C.) After cleaning, turn the exhaust port down and blow any loose particles away with compressed air. Wear eye protection during this operation. See Figure 30.

Muffler studs are threaded into the cylinder. The muffler studs protrude by 60mm.

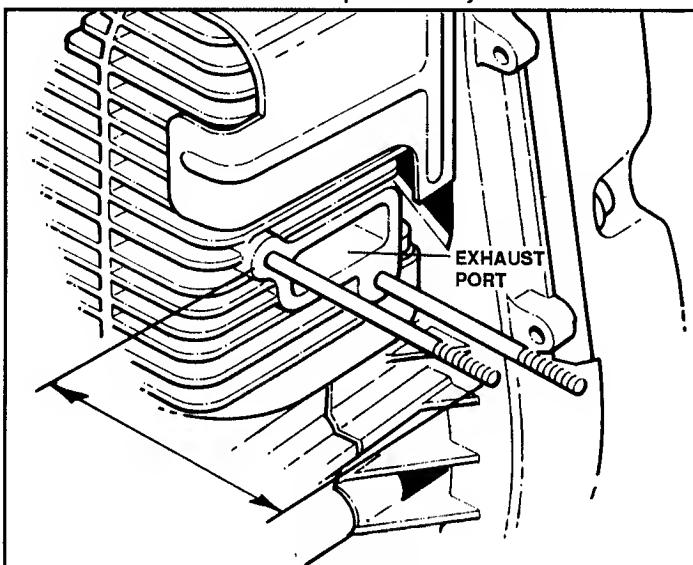


FIGURE 30

## L. THE POWERHEAD Piston/Cylinder/Crankcase

### 1. PRESSURE TEST

- (a) An engine with an air leak exhibits erratic idle, and/or excessive R.P.M. Test the crankcase for air leaks using the special tools as listed:

1. INTAKE PLATE #42187.
2. INT. PL. GASKET #42188.
3. EXHAUST GASKET #42189.
4. PRESSURE TESTOR #42190.

- (b) Place the exhaust shut-off gasket over the exhaust port and install the muffler. Install the intake gasket and shut-off plate. Use two (2) short M5x0.8 screws to retain the plate. With the sparkplug secure, pressurize the crankcase to 6 P.S.I. See Figure 31.

#### NOTE

IF THE SYSTEM LOSES MORE THAN 1 LB. PER MINUTE, LOCATE THE LEAK. CHECK FOR LEAKS AROUND THE ADAPTOR GASKETS, OIL SEALS OR ANY POROUS AREAS OF THE CRANKCASE.

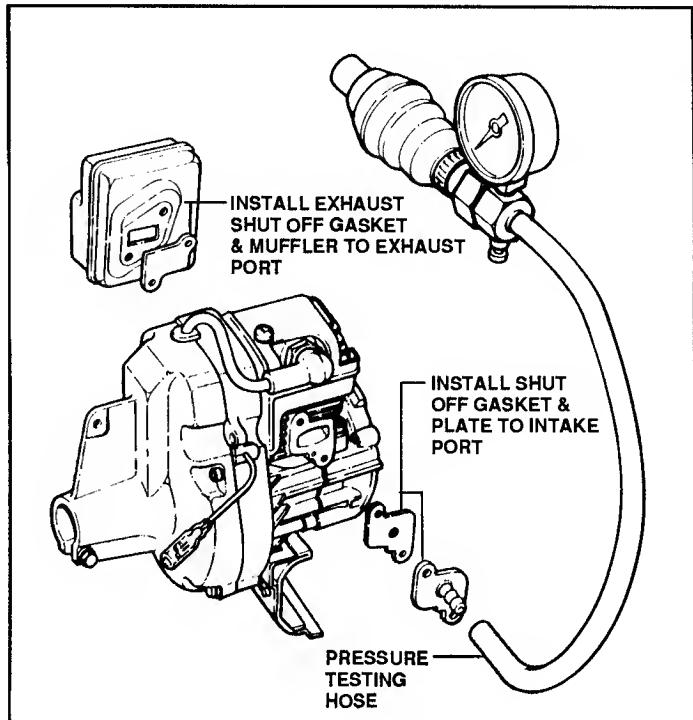


FIGURE 31

- (c) While piston/cylinder condition can be observed through the ports, only by removing the cylinder will one get complete details on powerhead condition. Remove the top shroud and remove the two cylinder screws. *M6 Torx use Torx T30 driver*

- (d) Do not confuse break-in wear marks on the cylinder walls for scoring. Scoring of the cylinder wall will be rough to the touch. Be certain to replace gasket if worn. The 21.2cc engine is manufactured with a chrome cylinder. Always check model, serial number and Illustrated Parts List before ordering cylinder and piston. Retorque cylinder screws to 71 -81 in. lbs.

## M. PISTON REMOVAL

1. First remove piston rings, then the snap rings. The snap rings are located on both sides of the piston pin. Utilize piston pin driver, part number 42185, to extract the pin. Line up the driver in order to push the pin without binding. Place a rag under the piston when nearing completion, as the needle bearings may release from the cage. See Figure 32.
2. Remove the piston and account for all 21 needle bearings. The cage retainer should be pressed out if replacement is necessary. Press new cage in evenly so that it protrudes from the connecting rod equally on both sides.

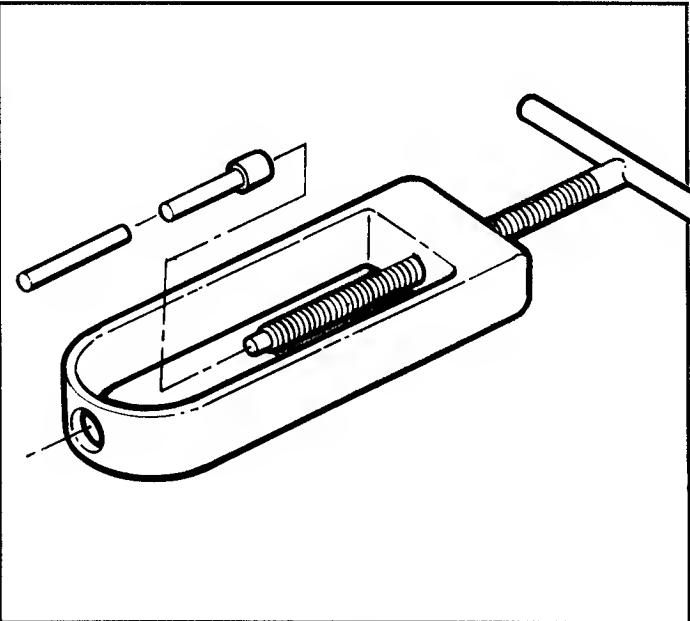


FIGURE 32

- The piston has a ring locating pin. Be certain that the ring end gap fits around the pin during assembly. The arrow on the piston dome **MUST** face the exhaust port. Lightly coat a new piston/cylinder with 32:1 fuel mixture oil prior to assembly. See Figure 33.

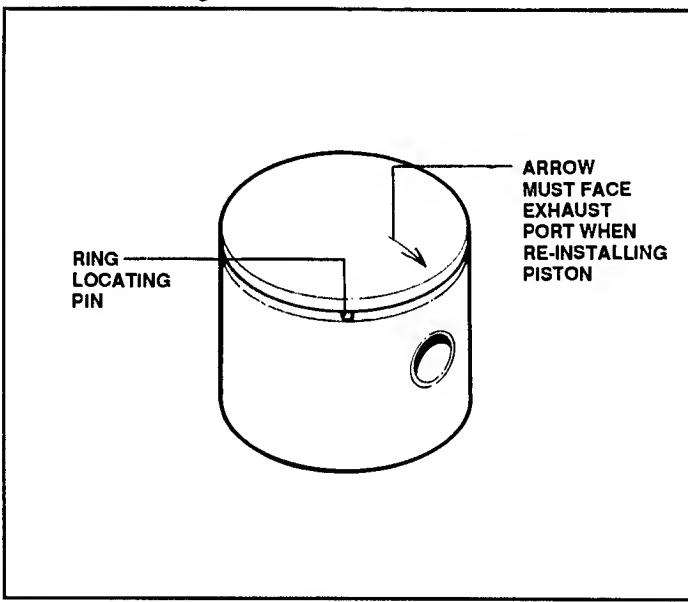


FIGURE 33

- To make needle bearing retention better during piston pin insertion, lightly grease the inside of the cage. Reinstall the piston/piston pin with the same special tool used in removal. Ensure that piston pin enters piston and connecting rod straight. Reinstate snap rings. Use new rings if old snap rings are disformed.

## N. CRANKCASE

- To separate the crankcase halves, remove the four retaining screws located on the starter side of the case. See Figure 34.

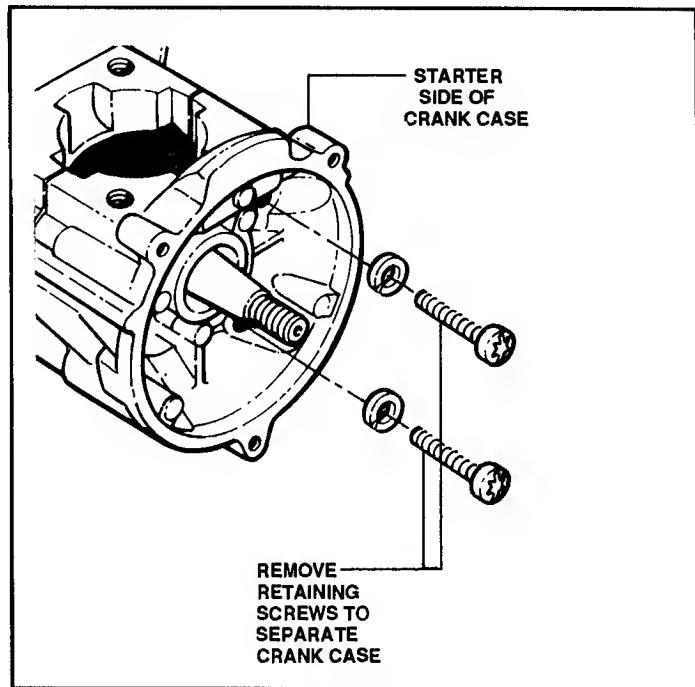


FIGURE 34

- Pull the crankcase apart and remove the two dowel pins. The crankcase shaft will pull out or can be gently pressed into the case. The crankshaft/connecting rod assembly is assembled at the factory and cannot be serviced. If damaged, it must be replaced.

## O. MAIN BEARINGS AND OIL SEALS

- The 21 2cc engine uses needle main bearings.
- To press out the needle bearings, use a socket with a slightly smaller O.D. than the I.D. of the crankcase opening. Always press bearings on the outside rim or border. Reinstall bearings using the same method. Lightly coat the bearings with 30-weight oil, making installation easier. Press bearing so that it protrudes into the inside of the crankcase. The surface of the bearing should measure 11mm from the crankcase mating surface. Use same method for other crankcase half. See Figure 35.

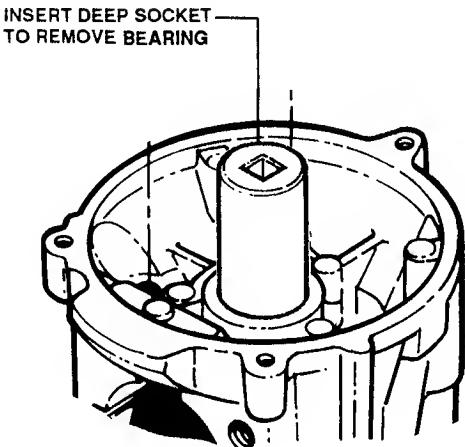


FIGURE 35

**R.P.M. SETTINGS (Plus or minus 200 RPM)**

MODEL	IDLE RPM	FULL THROTTLE	CLUTCH ENGAGE
212	2500	7200	3300
213	2500	7200	3300
214	2500	6800	3300
215	2500	7200	3300

# CARBURETOR TROUBLESHOOTING GUIDE

START	• WON'T OR HARD START (ENGINE COLD) • WON'T OR HARD START (ENGINE HOT) • FUEL DRIPPING FROM CARBURETOR • ENGINE FLOODS WHEN NOT RUNNING	1 2 3 4
IDLE	• WILL NOT IDLE • RICH IDLE (LOADS UP WHILE IDLING) • IDLES WITH LOW SPEED NEEDLE CLOSED • ERRATIC IDLE • "L" NEEDLE NEEDS FREQUENT ADJUSTMENT	5 6 7 8 9
ACCELERATION OR DECELERATION	• WILL NOT ACCELERATE • ENGINE DIES ON DECELERATION • POOR ACCELERATION • SLOW DECELERATION	10 11 12 13
HIGH SPEED	• WILL NOT RUN AT W.O.T. • POOR OR LOW POWER UNDER LOAD • WILL NOT 4-CYCLE UNDER NO LOAD AT W.O.T. • "H" NEEDLE NEEDS FREQUENT ADJUSTMENT	14 15 16 17

## NOTE:

This guide should only be used when standard engine troubleshooting procedures indicate a problem with the fuel system.

- Verify fuel condition & proper mixture.
- Verify adequate secondary engine compression.
- No primary air leaks and must hold adequate primary crankcase compression.
- Initial carburetor low speed, high speed and idle adjustment set to manufacturer's recommendations.

W.O.T. = WIDE OPEN THROTTLE

## MINOR ADJUSTMENTS

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
• LOW SPEED NEEDLE	•	•			•	•			•	•	•	•	•	•	•		
• HIGH SPEED NEEDLE	•								•	•	•	•	•	•	•		
• IDLE SPEED SCREW		•		•						•		•				•	

## FUEL SUPPLY SYSTEM

• FUEL CAP VENT (RESTRICTED/PLUGGED)		•		•	•			•		•	•	•	•	•	•	
• FUEL FILTER, LINE (RESTRICTED/PLUGGED)	•			•				•		•	•	•	•	•	•	•
• FUEL LINE (LOOSE/DAMAGED)	•		•	•				•		•	•	•	•	•	•	•
• DIRT IN FUEL PASSAGE									•	•						•

## AIR INTAKE AND FUEL PUMP SYSTEM

• AIR FILTER (RESTRICTED)		•			•			•		•	•	•	•	•	•	
• CARBURETOR BOLTS, GASKETS (LOOSE/LEAKING)		•	•						•	•	•	•	•	•	•	
• THROTTLE SHAFT, PLATE (LOOSE/WORN)	•	•							•		•	•	•	•	•	•
• THROTTLE SHAFT, PLATE (BENT/BINDING)	•	•						•			•	•	•	•	•	•
• CHOKE SHAFT, PLATE (LOOSE/WORN/BENT)	•															
• PULSE PASSAGE (LEAKING/RESTRICTED)		•			•			•		•	•	•	•	•	•	•
• FUEL PUMP DIAPHRAGM, GASKET (LEAKING/STIFF/MISASSEMBLED), COVER SCREWS (LOOSE)			•		•			•		•	•	•	•	•	•	•
• INLET SCREEN (RESTRICTED/PLUGGED)	•	•			•						•	•	•	•	•	•
• THROTTLE PLATE SCREW (LOOSE)									•							
• THROTTLE RETURN SPRING (DEFECTIVE)																
• THROTTLE STOP (BENT/DAMAGED)																

## METERING SYSTEM

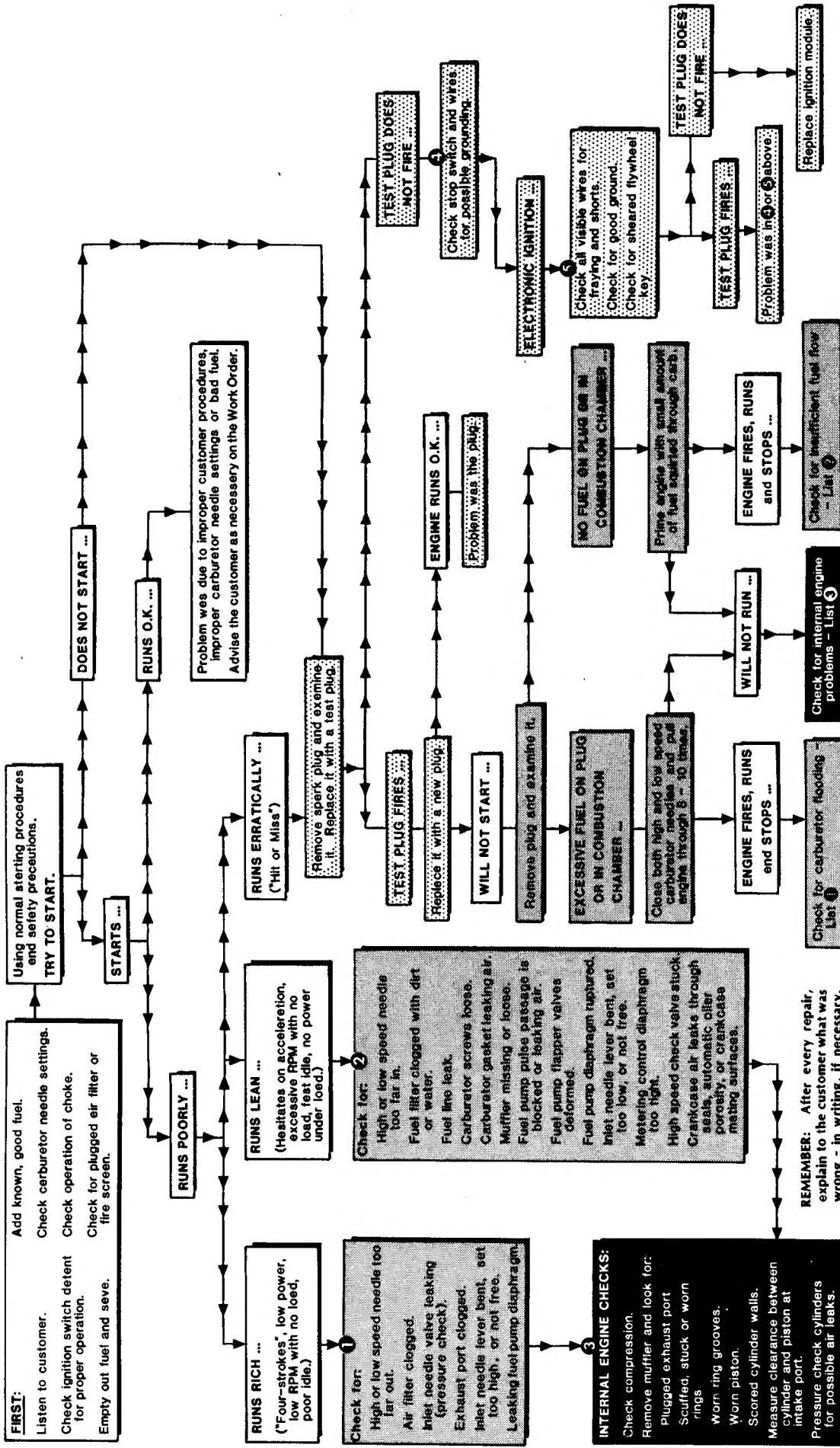
• INLET NEEDLE (STICKING)	•								•	•						•
• INLET NEEDLE LEAKING (DIRTY/WORN TIP/WORN SEAT)		•	•	•	•			•		•						•
• INLET LEVER, SPRING (WORN/BENT/IMPROPERLY INSTALLED)	•	•		*		•	•	•	•	•						•
• INLET LEVER (SET TOO HIGH)		•	•	•	•			•		•						
• INLET LEVER (SET TOO LOW)	•										•	•	•	•	•	•
• METERING DISK (WORN)										•						
• METERING COVER VENT HOLE (RESTRICTED/PLUGGED)	•					•										
• METERING DIAPHRAGM, GASKET (LEAKING/DAMAGED/IMPROPERLY INSTALLED), COVER SCREWS (LOOSE)	•		•			•		•	•	•	•	•	•	•	•	•
• WELSH PLUGS (LEAKING)		•				•		•	•							
• LOW SPEED FUEL PASSAGES (RESTRICTED/PLUGGED)	•	•			•			•			•					•
• HIGH SPEED FUEL PASSAGES (RESTRICTED/PLUGGED)	•															
• LOW OR HIGH SPEED NEEDLE, SEAT (DAMAGED/WORN)	•	•		•	•	•	•	•	•							•
• LOW OR HIGH SPEED TENSION SPRING (DISTORTED/WEAK)	•	•		•	•	•	•	•	•							•
• MAIN NOZZLE CHECK VALVE (STICKING/BLOCKED)	•									•	•	•	•	•	•	•
• MAIN NOZZLE CHECK VALVE (LEAKING)	•								•	•	•	•	•	•	•	•

## **SNAPPER 21.2 cc Power Head TWO-CYCLE ENGINE TROUBLESHOOTING PROCEDURES**

**CODE:**

- Fuel (carburetion)
- Electrical (ignition)
- Mechanical (internal engine)

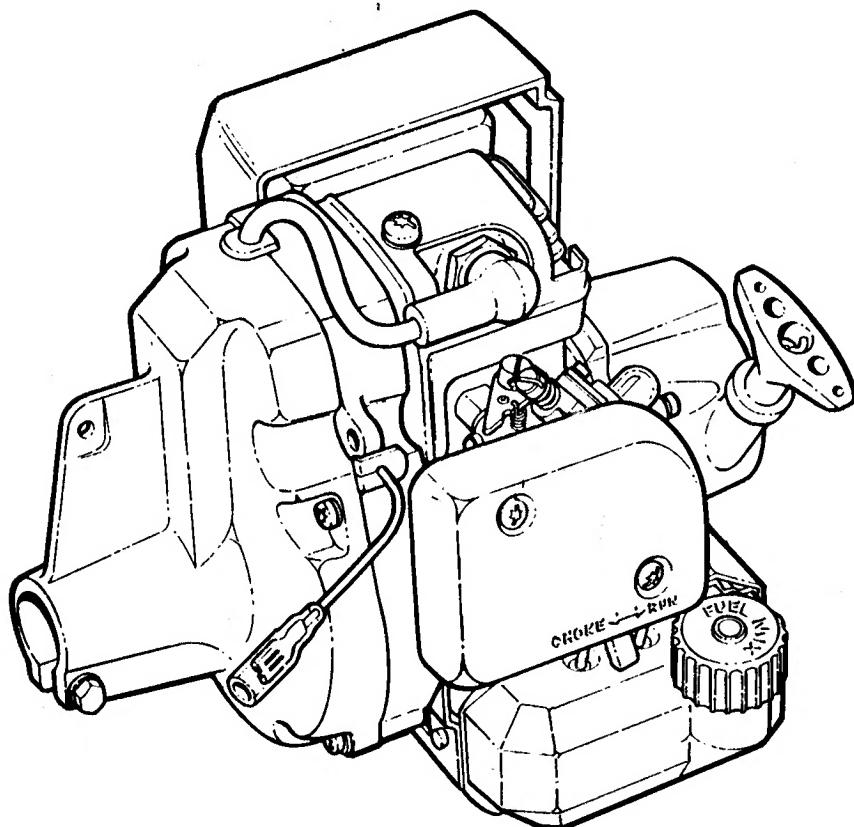
**Black:**



## **NOTES**

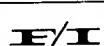
# Service Manual for **SNAPPER**<sup>®</sup>

## TRIMMER ENGINES: Models 212CST, 213CST, 214DCST & 215SST



**SNAPPER POWER EQUIPMENT**

McDonough, GA • 30253



**FUGUA**  
INDUSTRIES  
Company